

# Applied

## Grade 9 Assessment of Mathematics

Spring 2009

### **SAMPLE ASSESSMENT QUESTIONS**

**Record your answers to the multiple-choice questions  
on the blank Student Answer Sheet (Spring 2009, Applied).**

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Please note: The format of  
this booklet is different from  
that used for the assessment.  
The items themselves remain  
the same.

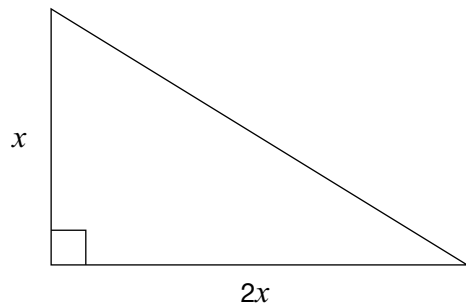
- 1** Darwin is making a drink that is a mix of crystals and water in a ratio of 2:5.

Darwin starts by mixing 4 cups of crystals with 9 cups of water.

How many more cups of water should he add to have a 2:5 ratio?

- a 0
- b 1
- c 2
- d 10

- 2** A gardener designs a rose bed in the shape of a right triangle. The ratio of the two shorter sides is 2:1.



If the area is 25 square units, what are the dimensions of the shorter sides?

Hint:  $A = \frac{bh}{2}$

- a 1, 2
- b 1, 3
- c 5, 5
- d 5, 10

- 3** What is a simplified form of the expression  $2x - 3 - 5x + 1$ ?

- a  $3x - 2$
- b  $3x + 2$
- c  $-3x - 2$
- d  $-3x + 2$

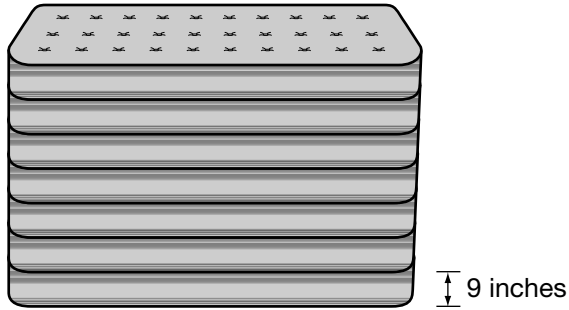
- 4** What is the value of  $x$  that satisfies the equation  $4x - 9 = 2x + 3$ ?

- a 2
- b 3
- c 5
- d 6



**5 Stacked High**

A mattress company has 7000 mattresses to sell. The company claims that if all the mattresses are stacked on top of each other, the stack will be 3 times the height of the CN Tower.

**Hint:**

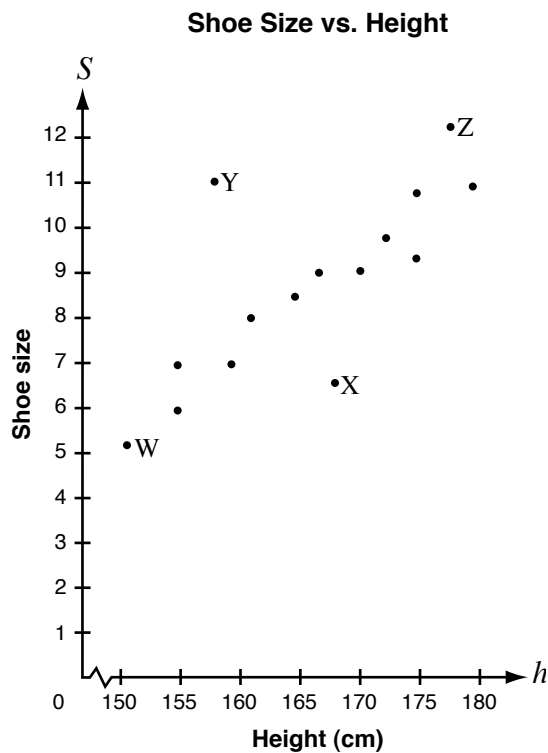
$$1 \text{ inch} = 2.5 \text{ cm}$$

$$1 \text{ m} = 100 \text{ cm}$$

The height of the CN Tower is 553 m and each mattress is 9 inches high. Is the company's claim true?

Justify your answer.

- 6** The graph shows the shoe sizes of girls of various heights.



Which point represents a girl whose shoe size is smaller than expected for a girl of her height?

- a W
- b X
- c Y
- d Z

- 7** Ali collects data to investigate how the area of the wall lit by an overhead projector increases as the projector moves away from the wall. The chart below shows Ali's data.

Distance from the wall (m)	Area on the wall (m <sup>2</sup> )
1	1
2	4
3	9
4	16

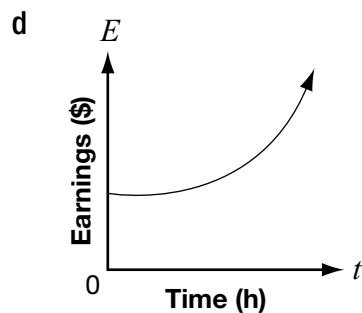
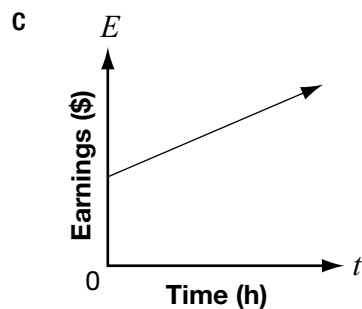
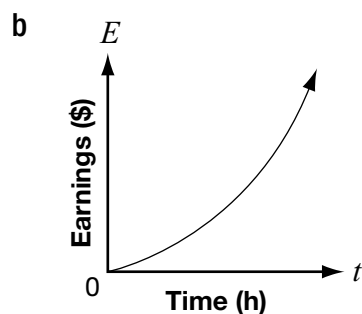
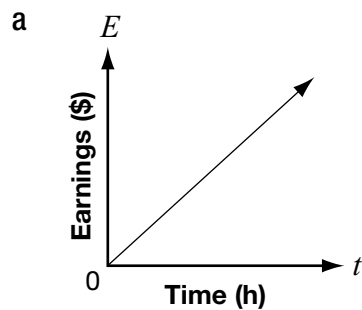
Which of the following trends does the data support?

As the distance increases, the area

- a increases at a constant rate.
- b decreases at a constant rate.
- c increases at an increasing rate.
- d decreases at an increasing rate.

- 8** Koshen is creating his own summer gardening job. For each garden, he will charge a \$10 initial consultation fee plus \$8 per hour.

Which graph best represents Koshen's earnings for each garden?



- 9** Which of the following tables represents a non-linear relation?

**a**

$n$	$C$
0	7
2	11
4	15
6	19
8	23

**b**

$n$	$C$
0	16
1	13
2	10
3	7
4	4

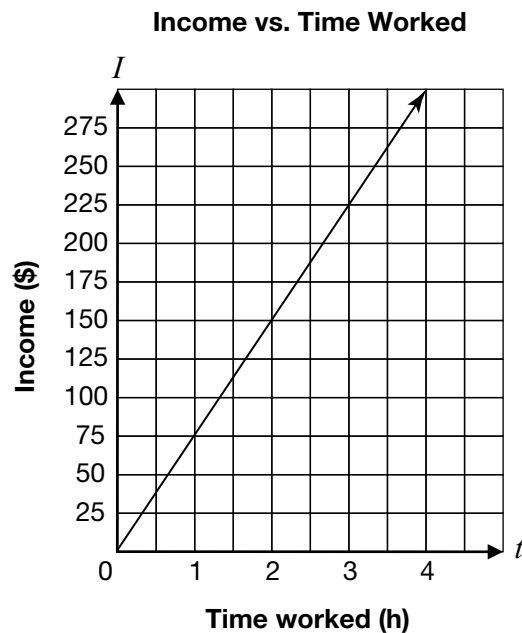
**c**

$n$	$C$
0	12
2	10
4	8
6	6
8	4

**d**

$n$	$C$
0	1
1	2
2	4
3	7
4	11

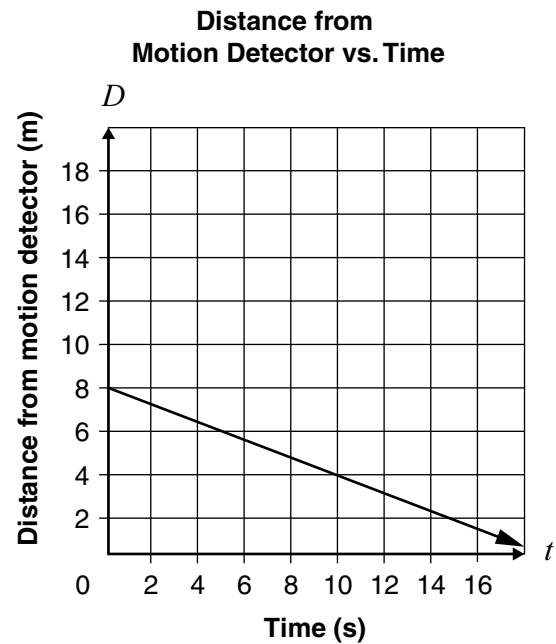
- 10** Joe owns an auto-repair shop. He charges his customers an hourly rate for repairs. The relationship between his income and the amount of time he works is shown below.



What is Joe's hourly rate?

- a \$25/hour
- b \$75/hour
- c \$150/hour
- d \$225/hour

- 11** The graph below shows the relationship between Rick's distance from a motion detector and the time he walks.



Which equation represents Rick's distance,  $D$ , from the motion detector based on time,  $t$ ?

- a  $D = -\frac{2}{5}t + 8$
- b  $D = \frac{2}{5}t + 8$
- c  $D = -\frac{5}{2}t + 8$
- d  $D = \frac{5}{2}t + 8$

- 12** The cost,  $C$ , in dollars of producing  $n$  yearbooks is represented by the equation

$$C = 1000 + 5n.$$

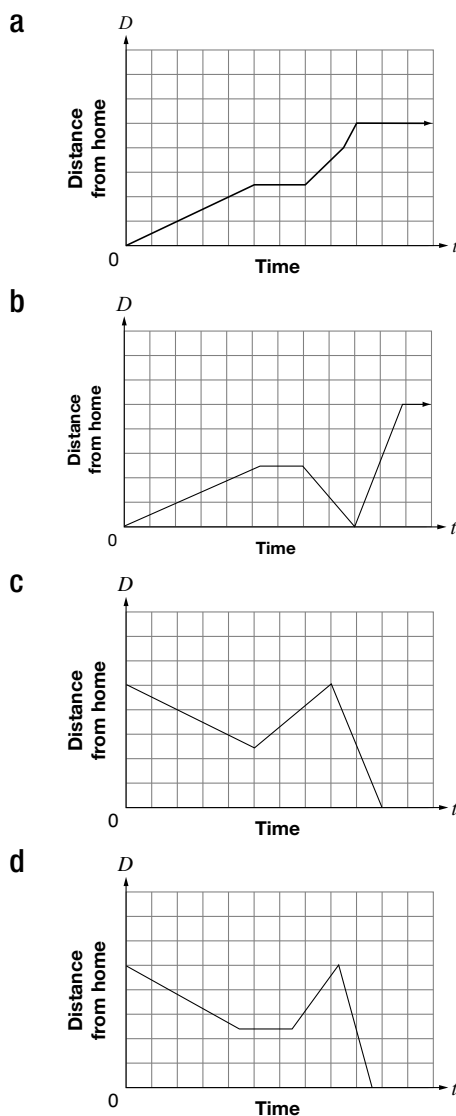
How much would it cost to produce 75 yearbooks?

- a \$375
- b \$625
- c \$1000
- d \$1375

**13** **Maya's Trip to School**

- Maya walks to her friend Kadeem's house, which is halfway between her home and the school.
- They stay at Kadeem's house for a few minutes, until Maya remembers that she has forgotten her lunch.
- Maya runs back home to get her lunch.
- When she gets home, her mother drives her to school so that she will not be late.

Which graph most accurately represents Maya's trip to school?

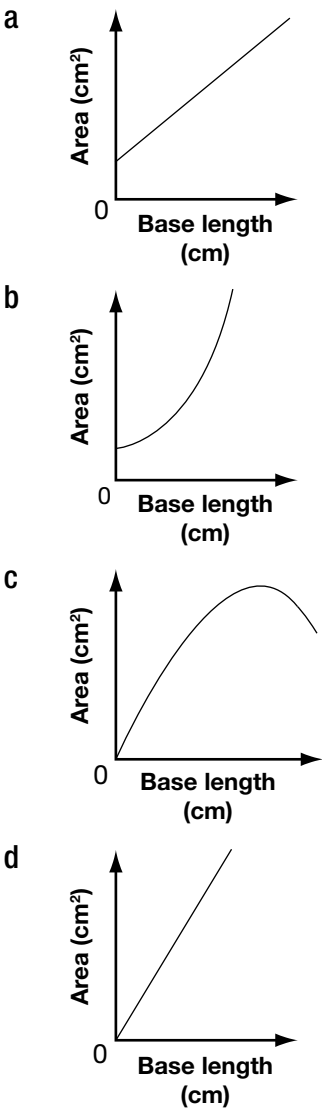


- 14 The data for five isosceles triangles with perimeters of 24 cm are shown below.

Triangles With 24 cm Perimeters

Length	Approximate Area of the Triangle
1 cm	6 cm <sup>2</sup>
3 cm	16 cm <sup>2</sup>
6 cm	25 cm <sup>2</sup>
10 cm	24 cm <sup>2</sup>
11 cm	19 cm <sup>2</sup>

Which graph best represents the relationship between the base length and the area of the triangle?





**15 Ripples in the Pond**

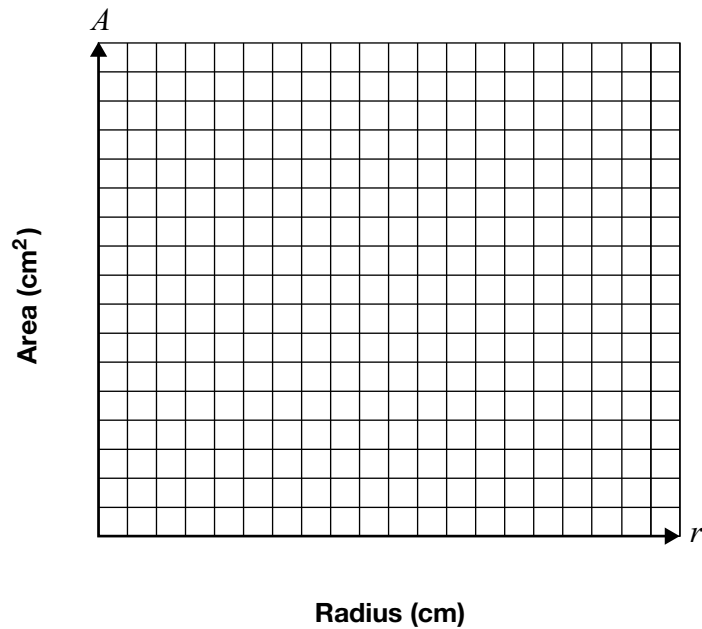
Quinn drops a pebble into a shallow pond and watches a circular wave ripple outward. The area of the circle increases as the radius increases.

Complete the table.

Radius (cm)	Area (cm <sup>2</sup> )
0	
1	
2	
3	
4	
5	

Hint: Area of circle =  $\pi r^2$

Graph these data below. Choose and label an appropriate scale for each axis.



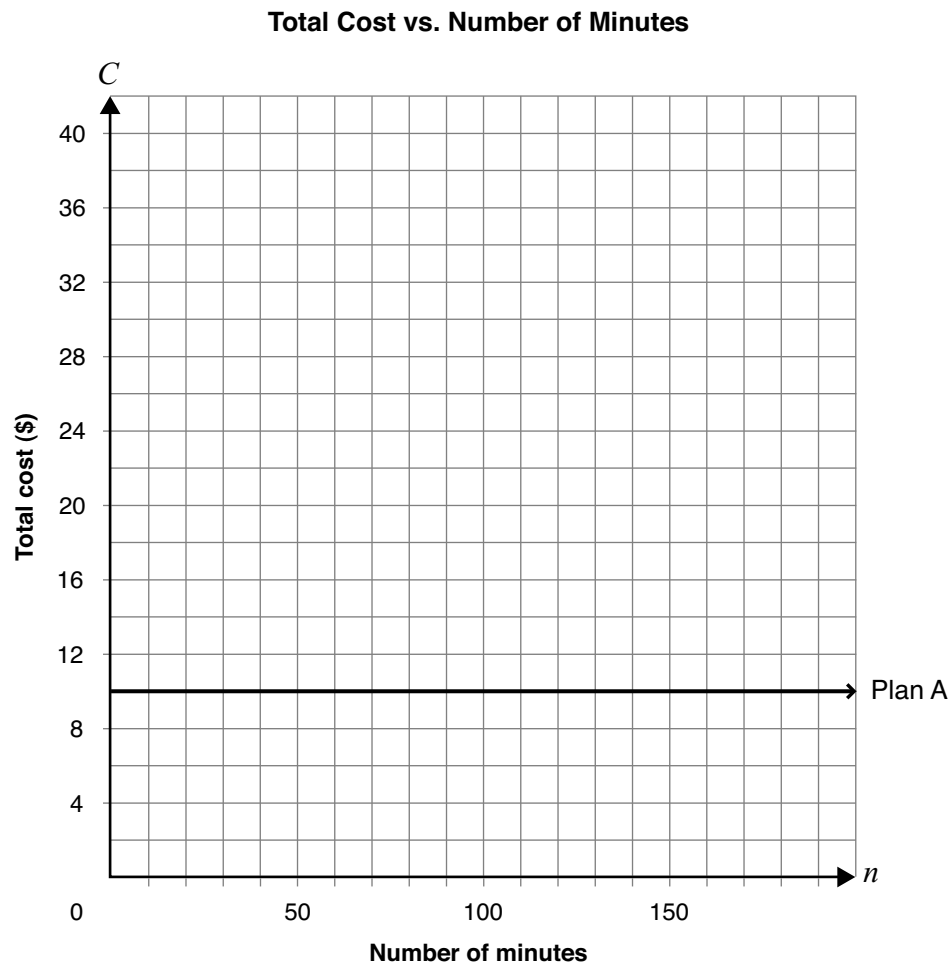
Draw a line or curve of best fit.

**16 I'll Call You**

Jasdeep has two options for long-distance phone calls.

- Plan A, as shown on the graph below, charges \$10.00 per month for unlimited minutes.
- Plan B charges \$0.20 per minute with no initial fee.

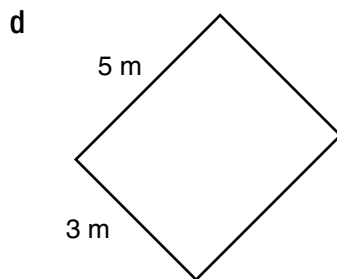
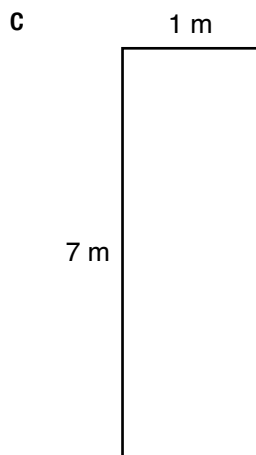
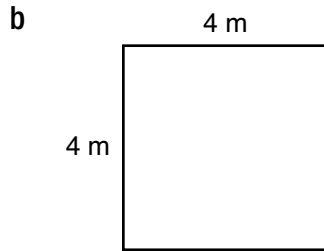
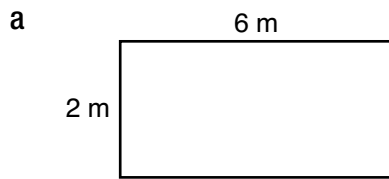
Graph Plan B on the grid below.



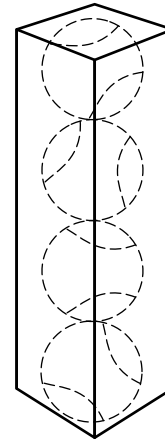
Determine under which conditions Jasdeep should select each plan.

Justify your answer.

- 17** Which of the following rectangles provides the maximum area for a perimeter of 16 m?

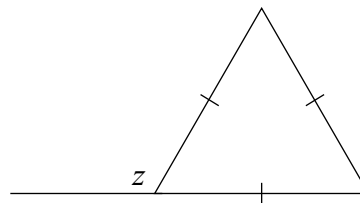


- 18** Tennis Inc. has decided to package 4 tennis balls in a box shaped like a rectangular prism. Tennis balls have a radius of 5 cm.



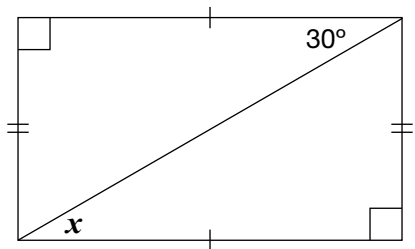
Which set of dimensions would tightly fit 4 tennis balls?

- a**  $5\text{ cm} \times 5\text{ cm} \times 20\text{ cm}$   
**b**  $5\text{ cm} \times 5\text{ cm} \times 40\text{ cm}$   
**c**  $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$   
**d**  $10\text{ cm} \times 10\text{ cm} \times 40\text{ cm}$
- 19** What is the value  $z$  in the diagram below?



- a**  $60^\circ$   
**b**  $100^\circ$   
**c**  $120^\circ$   
**d**  $140^\circ$

- 20 Consider the diagram below.



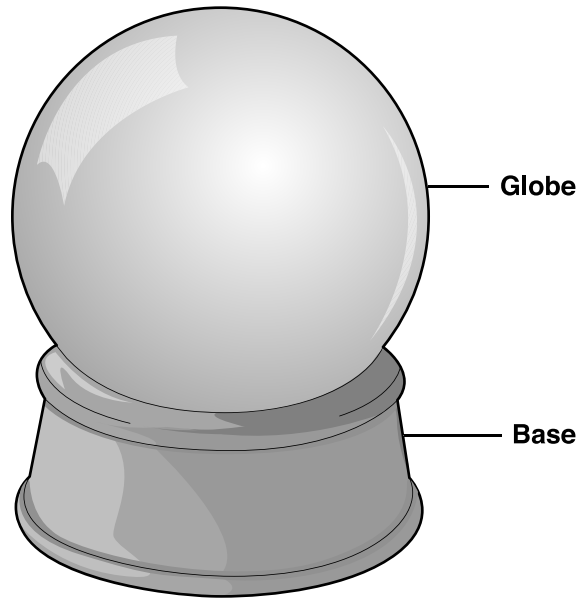
What is the value of  $x$  in the diagram?

- a  $150^\circ$
- b  $90^\circ$
- c  $60^\circ$
- d  $30^\circ$



**21 Global Gift Shop**

A gift shop sells water-filled spherical globes that sit on bases.



There are two sizes to choose from.

- A small globe has a radius of 6 cm.
- A large globe has a radius of 18 cm.

Mary thinks that the volume of water contained by the large globe is about three times the volume of water in the small globe.

Is she correct?

Circle one:      Yes                  No

Justify your answer.

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